

# ABSTRACT

Methods and apparatus for reducing the intensity of hurricanes are described herein. A method may include positioning a fleet of submersibles in an area of ocean through which at least a portion of a hurricane's central core will pass within a predetermined amount of time.

- 5 The submersibles are maneuvered to a depth greater than a depth of a thermocline in this area of ocean. The submersibles maintain their station and depth for a finite amount of time, during which they may release a gas to form bubble plumes which rise toward the ocean's surface. The bubble plumes entrain and upwell cold sub-thermocline water toward the surface of the ocean to cool the surface of the ocean. The cooled ocean surface reduces the intensity of the hurricane
- 10 whose portion of central core passes through the cooled area. An apparatus to generate a bubble plume may include a gas source, a gas manifold to releasably collect gas from the gas source, and a cover having perforations of a predetermined shape, size, and spacing to produce a predetermined rate of upwelling of seawater. The apparatus may further include a duct to receive at least a portion of the generated bubble plume and channel the cold upwelled seawater toward the surface of the ocean.

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